United States Coast Guard

FOREIGN CHEMICAL, GAS, & NATURAL GAS TANK VESSEL EXAMINATION BOOK

Name of Vessel	**Flag** No Change	
IMO Number	**Case Number**	
Date Completed	**Priority**	**Points**
Location		
Vessel Built in Compliance with SOLAS: **60** **74** **74/78** **NA**		
Letter of Compliance Issued Endorsed		
Exam Type Biannual Reexamination		
Senior Marine Inspectors / Port State Control Officers **1.** _____ **3.** _____ **2.** _____ **4.** _____		

CG-840 LOC
Rev. 1/99

Deficiency Summary Worksheet:

Name of Vessel _____ **VIN** _____

Deficiency	MSIS Code	Req't. Issued / Date Completed

Deficiencies identified should be listed with MSIS codes. At completion of inspection/examination, any outstanding deficiencies shall be entered in MIDR or PSDR as appropriate. All deficiencies found (outstanding and completed) shall be entered in the Deficiency Summary. Worklist items, which serve only as memory joggers to complete inspection/examination (e.g., test emergency fire pump), should not be coded as deficiencies.

MSIS Codes for Deficiencies:

BS	Ballast	**DC**	Dry Cargo	**IC**	I/C Engine
BI	Bilge	**ES**	Electrical	**LS**	Lifesaving
BA	Boiler, Aux.	**FF**	Firefighting	**MI**	Miscellaneous
BM	Boiler, Main	**FL**	Fuel	**NS**	Navigation
CS	Cargo	**GS**	General Safety	**PP**	Propulsion
DM	Deck Machinery	**HA**	Habitation	**SS**	Steering
DL	Doc., Lics., Pmts.	**HU**	Hull		

Use of Foreign Chemical, Gas, & Natural Gas Tank Vessel Examination Book:

This examination book is intended to be used as a job aid by Coast Guard senior marine inspectors/port state control officers during boardings of foreign-flagged tank vessels receiving Letters of Compliance (LOC's). This book contains an extensive list of possible examination items. It is not, however, the Coast Guard's intention to "inspect" all items listed. As a port state responsibility, senior marine inspectors/port state control officers must verify that the vessels and their crews are in substantial compliance with international conventions and applicable US laws. The depth and scope of the examination must be determined by the senior marine inspectors/port state control officers based on their observations.

This document does not establish or change Federal laws or regulations. References given are only general guides. Refer to IMO publications, CFR's, the Port State Control Job Aid, NVIC's or any locally produced cite guides for specific regulatory references. Although not all items in this book are applicable to all vessels, Section 1 should be filled out in its entirety at each examination and reexamination.

NOTE: *Guidance on how to examine foreign tank vessels can be found in MSM Volume II, Chapter 21: Procedures Applicable to Foreign Tank Vessels.*

Guide to Examinations:

☐ Biannual examination and reexamination

◇ Biannual examination only

○ Expanded examination as required

These three stages are only a general guide. Each senior marine inspector/port state control officer should determine the depth of the examination necessary. A checked box should be a running record of what has been examined by the senior marine inspector/port state control officer. It does not imply that the entire system has been examined or that all or any items are in full compliance.

NOTE: *A reexamination normally includes an examination of the vessel's documents, certificates, and licenses, in addition to a "walk-through" of the vessel.*

Pre-inspection Items

- Review MSIS records.
  - PSVH
  - VFIP
- Obtain copies of forms to be issued.

Post-inspection Items

- Issue letters/certificates to vessel.
  - Record of deficiencies
- Complete MSIS entries within 48 hours.
  - PSAR
  - MSDS
  - PSDR
  - VFLD
  - VFIP

Detention Information:

NOTE: *Complete prior to recommendation.*

Verify owner (from DOC or COFR), operator, and mailing address.

Verify owner's agent.

Verify last and future drydock dates and locations.

If dual classed, who will respond? _____

Which agency issued the documents that have major problems?

What is the date of the last survey conducted for those items that have problems?

What are the vessel's plans to deal with the problems?

What is the crew's attitude toward the problems?

Is the detention ISM related? If so, include ISM certification information in the Detention Report to G-MOC-4.

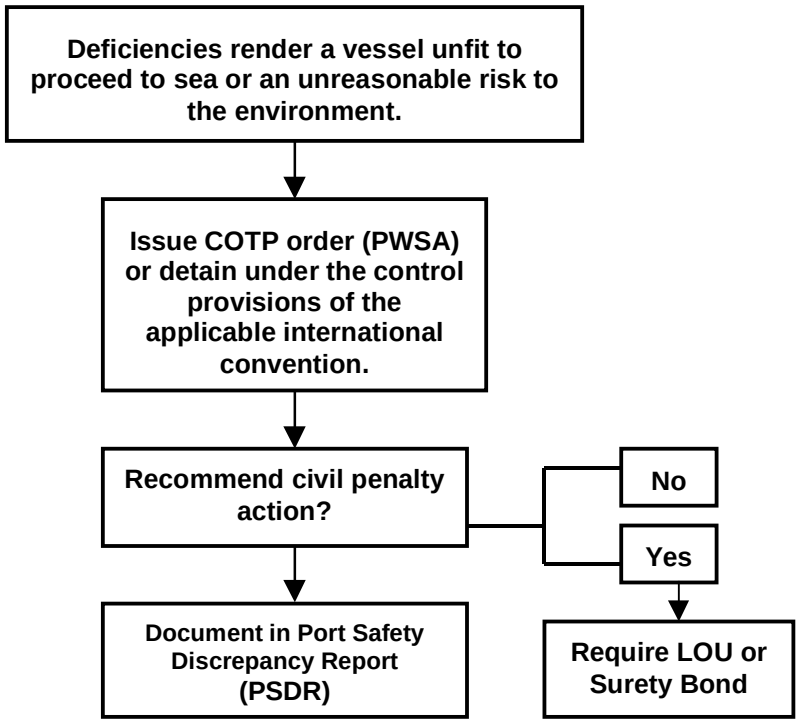
Notes: _____

Section 7: Expanded Examination Items

Section 8: Appendices

Requiring Corrective Measures Prior to Departure

(DETENTION)



Examples include the following:

- Excessive wastage, corrosion, pitting, holes, or damage to the hull, cargo hatches, fire main, or other vital system.
- Inoperable emergency fire pump or emergency generator.
- Inability to lower lifeboats.
- Inoperable lifeboat motors (i.e., will not start).
- Crew incompetent to carry out duties (e.g., fire or boat drills, cargo transfer, stability calculations, etc.).
- Licenses invalid.
- Safe Manning Document not on board.

Involved Parties & General Information:

Owner's Agent
Individual
Phone Number

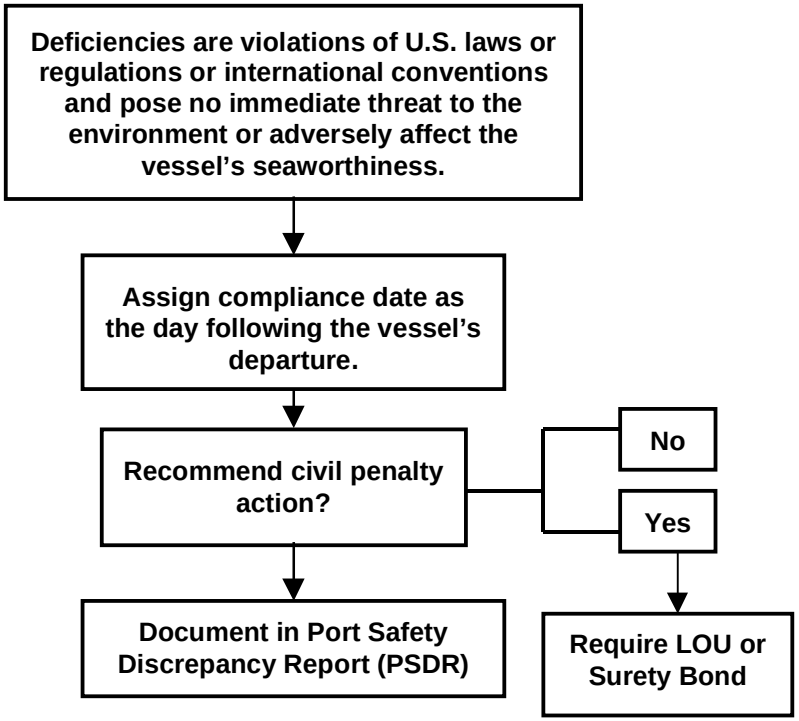
Charterer's Agent
Individual
Phone Number Same as Owner's Agent

Owner—Listed on DOC or COFR
No Change

Operator
No Change

Requiring Corrective Measures Prior to Return to U.S.

(NO DETENTION)



Examples include the following:

- Charts or nautical publications not currently corrected.
- Portable hoses have not been tested but appear in good condition.
- Actual location of safety equipment deviates from the vessel safety plan.
- Electrical fixtures in paint locker not appropriately certified for safe usage in hazardous location. (Operational controls, such as disconnecting the electrical power source or removing flammables from the space, may satisfactorily remove risk to vessel.)

Section 2: Certificates and Documents

International Certificates:

Name of Certificate	Issuing Agency	ID #	Port Issued	Issue Date	Exp. Date	Endors. Date
Certificate of Registry No Change						
Classification Document No Change						
Certificate of Financial Responsibility (COFR) No Change	USCG					
Safety Construction (SLC) No Change						
Safety Equipment (SLE) No Change						
Safety Radio (SLT) No Change						
Cargo Ship Safety (CSS) No Change						

Recommended Port State Control Procedures:

The following flowcharts contain information gleaned from the Marine Safety Manual Volume II, Chapter 24. The senior marine inspector/port state control officer should be familiar with this chapter as well as the information pertaining to Port State Control examinations contained in MSM Volume II, Chapters 19—Foreign Vessel Exams (General), 21—Foreign Vessel Exams (Tanker), and 23—Targeting of Foreign Vessel Boardings.

Considering the seriousness of the deficiencies, the OCMI or COTP must determine the appropriate control action to impose on these vessels to ensure the safety of the vessel, the port, and the environment. The degree of control imposed, as well as the authority used to exercise control, must be consistent with the nature of the deficiencies.

The following definitions and terms of reference are used in the MSM to describe key elements of Port State Control enforcement:

Clear Grounds. Evidence that the vessel, its equipment, or crew do not correspond substantially to the requirements of the relevant conventions or that the master or crew members are not familiar with essential shipboard procedures relating to the safety of vessels or the prevention of pollution.

Control. Control is the process of imposing a port state's or flag state's authority over a vessel to ensure that its structure, equipment, operation and crew meet applicable standards. The process is affected by any verbal or written directives from the OCMI/COTPs or their representatives, which require action or compliance by the vessel.

Detention. Detention is a control action that restricts a vessel's right of free movement. The imposition of a restriction on the movement of a vessel constitutes a detention regardless of whether or not a delay from a vessel's normal or expected itinerary occurs. Detentions may be carried out under the authority of the applicable international convention, the Ports and Waterways Safety Act (PWSA) or a Customs hold.

Intervention. An intervention is a control action taken by a port state, which interposes the port state's authority over a foreign flag vessel in order to cause the vessel to be brought into compliance with an applicable international convention. Interventions are undertaken by a port state when a vessel's flag state has not, can not, or will not exercise its obligations under an international convention to which it is a party. This may include requesting appropriate information, requiring the immediate or future rectification of deficiencies, detaining the vessel, or allowing the vessel to proceed to another port for repairs.

Manning Certification:

☐ Safe Manning Document	SOLAS 74/78 V/13 IMO Res.A.481(XII)
• Manning in accordance with document ***NOTE:*** *If vessel does not have a Safe Manning Document or is not manned in accordance with Safe Manning Document, local Consulate must be contacted and the deficiency resolved prior to vessel's departure from port.*	
• Review copy of crew list	
☐ Officers' certificates	STCW 95 I/2 STCW 95 I/10 STCW 95 VI/1 STCW 95 VI/2
• Master and chief engineer licenses current	
• Navigating and engineering officers' licenses current; ***NOTE:*** *3000 kW = 4023 hp*	
• Flag endorsement	
• Medical certificates	
☐ Crew documents	STCW 95 VI/1
• Documents current	
• Medical certificates valid (issued by flag state)	
• Minimum age 15	ILO 147 Art. II
☐ Rest periods	STCW 95 VIII/1
• Review watch schedules	

Logs and Manuals:

☐ Lifesaving equipment maintenance record	SOLAS 74/78 III/19
• Periodic checks as required	
• Visual inspection of survival craft / rescue boat and launching appliances	
• Operation of lifeboat / rescue boat engines	
• Lifesaving appliances, including lifeboat equipment examined	
☐ Emergency training and drills	SOLAS 74/78 III/18
• Onboard training in use of lifesaving equipment (all crew members)	
• SOLAS training manual	
• Logbook records	SOLAS 74/78 III/18.5
• Weekly and lifeboat drills	SOLAS 74/78 III/25

Notes: _____

_____

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_____

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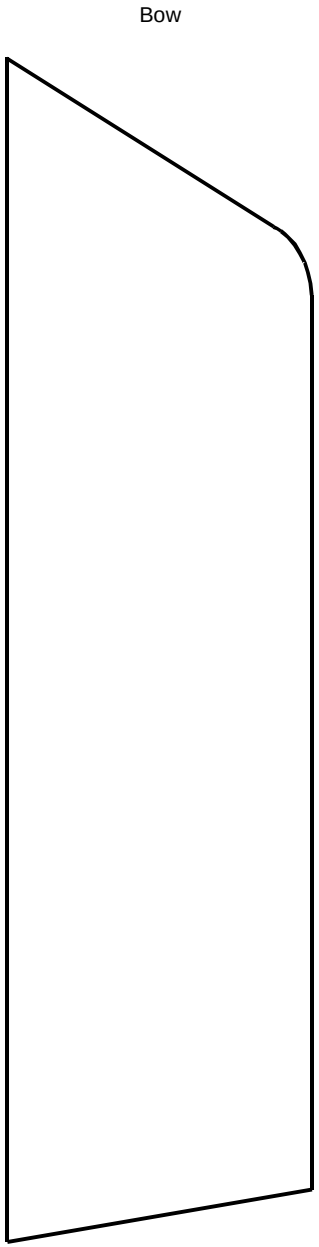

Chemical Cargo Records:

- ☐ Documents — 46 CFR 153.901
  - Readily available
  - Free of alterations
- ☐ Approved Procedures & Arrangement Manual — MARPOL Ax. II
- ☐ Cargo record book — MARPOL Ax. II/19
  - Proper format
  - Properly completed
- ☐ Cargo information — 46 CFR 153.907
  - Cargo manifest
  - Procedures for spills / leaks
- ☐ Cargo location plan — 46 CFR 153.907
  - Cargo compatibility — 46 CFR Part 150
- ☐ Cargo piping plan — 46 CFR 153.910
- ☐ Shipping document — 46 CFR 153.907
- ☐ Waiver letters carried — 46 CFR 153.10
- ☐ Certificate of inhibition or stabilization — 46 CFR 153.912
  - Name and concentration _____
  - Date added to cargo _____
  - Length of time effective _____
  - Temperature limitations _____
  - Certificate states action to be taken if voyage exceeds useful life of the inhibitor / stabilizer
- ☐ Current copy of 46 CFR Parts 35, 150, and 153 aboard — 46 CFR 153.905

Notes: _____

○ Proper operation of IGS audible and visual alarms

- High O_2 content of gas in IGS main
  - Activated at 8% concentration
- Low gas pressure in IGS main downstream of all non-return devices
  - Activated at 100mm (4 inches) water
- High gas pressure in IGS main downstream of all non-return devices
  - Blowers automatically shut down
  - Gas-regulating valves close
- Low / high water level or low flow to deck seal
  - Blowers automatically shut down
- Blowers discharge high temperature
  - Alarms activated at 150°F (65.6°C) or lower
  - Blowers automatically shut down
  - Gas-regulating valves close
- Failure of IGS blowers
  - Gas-regulating valves close
- Low water pressure or flow to flue gas scrubber
  - Blowers automatically shut down
  - Gas-regulating valves close
- High water level in flue gas scrubber
  - Blowers automatically shut down
  - Gas-regulating valves close
- Failure of power supply to automatic control system for gas-regulation valve and indicating devices for IG supply
- IG generator
  - Insufficient fuel supply
  - Failure of power supply to generator or control system for generator

Notes: _____

☐ Indicators — 33 CFR 164.35

- Illuminated rudder angle indicator
- Centerline RPM indicator
- Propeller pitch (CPP systems)
- Speed and distance indicators — 33 CFR 164.40
- Lateral thrusters

☐ Communications — SOLAS 74/78 IV/6.3, 33 CFR 26.03

- VHF radio

☐ Steering gear instructions — 33 CFR 164.35

- Instructions
- Emergency instructions
- Block diagram

☐ Maneuvering facts sheet with warning statement — 33 CFR 164.35

☐ Radiotelephone (VHF-FM) — SOLAS 74/78 IV/7, 33 CFR 26.03, 33 CFR 26.04

☐ EPIRB (406 MHz) — SOLAS 74/78 IV/7.1.6

- Float-free amount
- Battery date current
- Hydrostatic release

☐ GMDSS — SOLAS 74/78 IV/8, SOLAS 74/78 IV/9, SOLAS 74/78 IV/10, SOLAS 74/78 IV/11

- Additional radio equipment for area of operation

◇ Operationally test bridge steering — SOLAS 74/78 II/1-29

- Test power/control pumps independently
- Test follow-up and non-follow-up controls
- Rudder angle indicator accurate
- Activate loss of power alarm

Notes: _____

- ○ Steering gear alarms — SOLAS 74/78 II-1/29
  - Low hydraulic oil
  - Loss of power
  - Loss of phrase
  - Overload
- ○ Human Factors: determine if personnel are familiar with the operation of the following items — STCW Table A-III
  - Emergency generator:
    - Actions necessary before engine can be started
    - Different methods by which generator may be started
  - Stand-by generator engine:
    - Methods to start engine automatically or manually
    - Blackout procedures
    - Load-sharing system
  - Steering gear:
    - Action needed to bring main and auxiliary into operation
    - Changing steering from automatic to manual and vice versa
  - Bilge pumps:
    - Starting procedures for main and emergency bilge pump
    - Appropriate valves to operate
  - Fire pumps:
    - Starting procedures for main and emergency fire pumps
    - Appropriate valves to operate

Notes: _____

General Health and Safety

- ☐ Accident Prevention and Occupational Health — COMDTINST 16711.12A, ILO 147
  - Rails, guards, protective clothing and equipment, warning signs posted in crew work areas
- ☐ Crew accommodations — COMDTINST 16711.12A, ILO 147
  - Habitable conditions
  - Adequate lighting and ventilation
  - Free of cargo and stores
  - Individual berths
- ☐ Hospital space — COMDTINST 16711.12A, ILO 147
  - Designated for ships ≥ 500 GT with 15 or more crew on voyage of more than 3 days
  - Not used for stowage or berthing
  - Properly operating toilet
  - O_2 resuscitation equipment — IBC/BCH Codes
  - MFAG onboard (IMO Publication) — IBC/BCH Codes
- ☐ Galley — COMDTINST 16711.12A, ILO 147
  - Sanitary conditions
  - Hot and cold-running water
  - Adequately equipped to prepare food
  - Mess hall provided for crew
- ☐ Refrigerator and stores spaces — COMDTINST 16711.12A, ILO 147
  - Storage free of insects
- ☐ Sanitation — COMDTINST 16711.12A, ILO 147
  - Toilets operate (1/8 crew)
  - Showers operate (1/8 crew)
  - Wash basins
  - Lighted / heated / ventilated
  - Reasonably clean

Notes: _____

○ Paint lockers and flammable liquid lockers protected by an appropriate fire extinguishing arrangement — SOLAS 74/78 II-2/18.7

○ Fixed fire extinguishing arrangements in cargo spaces for vessels ≥ 2000 GT — SOLAS 74/78 II-2/53.1

○ Special arrangements in machinery spaces — SOLAS 74/78 II-2/11

- Machinery space ventilating fans can be shut down from outside spaces
- All openings capable of being closed from outside machinery spaces
- Machinery driving forced / induced draft fans, oil fuel transfer pumps, and other fuel pumps fitted with remote shutdowns located outside space concerned

○ Firemen's outfits (spot-check) — SOLAS 74/78 II-2/17.3

- Two lockers
- Four outfits
- Protective clothing
- Helmet, boots, and gloves
- Lamp
- Axe
- Breathing apparatus and lifeline

Pollution Prevention:

○ Equipment

- Test automatic stopping device required for discharge — MARPOL Ax. I/10
- Segregation of oil fuel and water ballast systems — MARPOL Ax. I/14
- Oily residue tank (discharge arrangements, homogenizers, incinerators, etc.) — MARPOL Ax. I/17
- Witness operational test of emergency shutdown — 33 CFR 155.780

Notes: _____

□ Side shell, accessible structural members, decks, and superstructure — ICLL 66 Reg. 1

- Fractures, corrosion, wastage, pitting or damage to the extent that it may impair ship's seaworthiness
- Excessive doublers, postage stamp inserts, cement boxes or soft patches
- Welding burn marks or other evidence of recent repair work
- Load line marked in accordance with certificates — ICLL 66 Regs. 4 - 9
  - Hailing port
  - Name
- Railings

□ Watertight/weathertight openings

- Watertight doors, gaskets, dogs — ICLL 66 Reg. 12
- Other openings (means of securing) — ICLL 66 Regs. 13 - 18
- Vents, air pipes and closing appliances — ICLL 66 Regs. 19 & 20

Ground Tackle:

□ Emergency towing arrangements (vessels ≥ 20,000 DWT only) — SOLAS 74/78 II-1/3-4

- Approved by Administration

◇ Anchor and windlass (spot-check)

- Foundations
- Drive units
- Guards
- Covers for moving parts
- Brake pads
- Deck fittings
- Electrical (wiring) or hydraulic piping

◇ Mooring winches / capstans

- Foundations
- Cables / hooks
- Boom
- Brake
- Electrical (wiring) or hydraulic piping
- Ladders / rails

Notes: _____

- ○ Lights, shapes, and sound signals — 72 COLREGS
  - Navigation lights
  - Sound signals
  - Distress signals
- ○ Radio log — SOLAS 74/78 IV/17
- ○ Radio operation — SOLAS 74/78 IV/7
  - Transmit on 2182 MHz and Ch. 6, 13, 16, 70
- ○ INMARSAT communications — SOLAS 74/78 IV/7.1.5

Cargo Operations:

- ○ Human Factors: determine if personnel are familiar with the following items: — STCW Table A-II/III
  - Special requirements (e.g., loading, segregation, firefighting equipment, etc.) for particular cargoes
  - Dangers posed by the cargo
  - Measures to be taken for cargo emergencies

Lifesaving Equipment:

- ○ Lifeboats/liferafts/rescue boats
  - Ensure effective operation of winches, davits, falls, sheaves, etc. (Lower at least one lifeboat to the water.) — SOLAS 74/78 III/19
  - Test lifeboat and rescue boat flemming gear and/or engines
  - Verify presence/condition of lifeboat equipment — SOLAS 74/78 III/41
  - Retro-reflective tape
  - Lighting — SOLAS 74/78 III/11.4

Notes: _____

- ☐ Liferafts — SOLAS 74/78 III/19
  - Required number — SOLAS 74/78 III/26
  - Stowage — SOLAS 74/78 III/29
  - Float-free arrangement
    - Hydrostatic release / weak link
  - Annual servicing (hydrostatic release and inflatable liferaft) — SOLAS 74/78 III/19.8.1, SOLAS 74/78 III/19.9.1
    - 17 months, if Administration-approved
  - Launching instructions posted — SOLAS 74/78 III/9
  - Bow / stern station
    - Lashed down on deck or in marked location
    - Lifejackets available
- ☐ Lifebuoys (spot-check)
  - Condition — SOLAS 74/78 III/19.2
  - Bridge location — SOLAS 74/78 III/7.1
    - Quick release system
    - Smoke and light float
  - Deck location
    - 50% with waterlights
  - Retro-reflective tape — SOLAS 74/78 III/30.2.7
- ☐ Lifejackets—watchstanders and crew (spot-check)
  - Condition — SOLAS 74/78 III/19.2
  - Stowage — SOLAS 74/78 III/7.2.2
  - Retro-reflective material — SOLAS 74/78 III/30.2.7
  - Lights — SOLAS 74/78 III/27.2
  - Whistles — SOLAS 74/78 III/32.1.6
- ☐ Line-throwing appliances (spot-check) — SOLAS 74/78 III/17
  - 4 charges
- ☐ Pyrotechnics (spot-check) — SOLAS 74/78 III/6.3
  - 12 distress flares
- ☐ Immersion suits and thermal protective aids (spot-check) — SOLAS 74/78 III/27.3
  - Condition — SOLAS 74/78 III/19.2
  - Retro-reflective material — SOLAS 74/78 III/30.2.7

Notes: _____

○ Company's training program conducted in accordance with STCW — STCW I/14

NOTE: *Documented procedures established to ensure new personnel and personnel transferred to new assignments are given proper familiarization with their duties.*

- Proper documentation
- Training conducted before crew is assigned shipboard duties
- Essential instructions are documented and provided before sailing

○ Crew familiar with SMS issues

- Ship's officers
  - Documented procedures
  - Preventative procedures for essential equipment
  - Reporting requirements for non-conformities and able to identify typical scenarios that may result in a documented non-conformity
- Master and chief engineer familiar with internal audit procedures (e.g., know how many audits required per year and have participated in at least one) in addition to requirement's for ship's officers

○ Documented maintenance system

- Documented in writing and computerized versions
- Readily available and in language understood by those who use them
- Procedures are followed
- Records maintained

○ Vessel-specific procedures are documented in writing and address the following areas:

NOTE: *Not mandatory that they follow the exact format listed below.*

- Preventative maintenance
- Navigation
- Bunkering operations
- Emergency preparedness
- Pollution prevention
- Technical procedures
- Communications

Notes: _____

◇ Structural fire protection (spot-check) — SOLAS 74/78 II-2/42

- Bulkheads
- Insulation
- Ventilation
- Penetrations

◇ Fixed fire extinguishing systems: cargo, machinery, and other spaces — SOLAS 74/78 II-2/21, 46 CFR 34.05-5(a)(2)

- Tanks, cylinders, piping, controls, alarms, and release mechanisms in good condition and available for immediate use

Type of system: (circle appropriate type)			
Low Pressure CO_2	High Pressure CO_2	Halon	Foam

Pollution Prevention: (spot-check at reexaminations)

☐ Pollution placard posted — 33 CFR 155.450

☐ MARPOL V placard posted — MARPOL Ax. V/9

☐ Oil and hazmat

- Fuel oil and bulk lubricating oil discharge containment — 33 CFR 155.320
- Prohibited oil spaces — 33 CFR 155.470

☐ Oily-water separating equipment, bilge alarm, and bilge monitor — MARPOL Ax. I/16, 33 CFR 155.380

- Alarm, recorder
- Standard Discharge Connection — 33 CFR 155.430

☐ Garbage

- Shipboard garbage properly disposed — MARPOL Ax. V/3
- Incinerator — 33 CFR 151.63
  - Evidence of use (clinkers)
  - Safety of burner assembly
  - Electrical controls
- Garbage Management Plan — MARPOL Ax. V/9

Notes: _____

◇ Abandon Ship Drill:

General alarms / signals	Familiarity with duties	Boat operation
Muster lists	Provide equipment	Egress procedures
Muster of crew	Familiarity with equipment	Davit-launched liferaft drill
Crew response	Lower lifeboat	Communication w/ bridge
Language understood by crew	Brake operation	Lighting
Lifejackets	Engine start	

(SOLAS 74/78 III/18.3; MSM Vol. II/22.C.7.h)

Location: _____ Time to Water: _____

Notes: _____

◇ Main ship service generators — SOLAS 74/78 II-1/41

NOTE: *Two independent sources of power require.*

- F/O piping
- Cooling lines
- Controls

◇ Emergency generator room — SOLAS 74/78 II-1/43

- Test operation of prime mover
- Personnel safety
- Ventilation adequate
- Electrical switchboard
  - Grounds

◇ Bilge pumps — SOLAS 74/78 II-1/21

- Two required

Notes: _____

☐ Fuel lines — 46 CFR 154.706

- Master valve

Double-walled fuel line

- Annular space inerted
- Pressure in annular space greater than gas pressure
- Visual and audible alarms in machinery space to indicate loss of inert gas pressure
- Termination — 46 CFR 154.707(a)

Single-walled fuel line

- Installed in mechanically exhaust-ventilated duct or pipe
- Ventilation (30 changes of air / hour) — 46 CFR 154.1205
- Pressure in space between inner and outer pipe < atmospheric pressure
- Continuous gas detection
- Termination hood or casing — 46 CFR 154.707(a)

☐ Valves — 46 CFR 154.708

- 2 fail-closed valves
- 1 fail-open valve for venting
- Automatic operation for—
  - Loss of boiler forced draft
  - Flame failure
  - Abnormal fuel supply pressure
- Master gas fuel valve outside machinery space
  - Operable from machinery space and at valve
  - Automatic closure for—
    - Gas leak
    - Loss of ventilation
    - Loss of inert gas pressure

☐ Gas detection equipment — 46 CFR 154.709, 46 CFR 154.1350

- Audible and visual alarm in machinery control station and wheelhouse
- Closes master gas fuel valve

Notes: _____

☐ Valves and handling equipment

- Manual stop — 46 CFR 153.283
- Pump manifolds — 46 CFR 153.285
- Emergency shutdown stations tested — 46 CFR 153.296
  - Minimum of two
  - Location
  - Single actuator
  - Properly marked
- Actuator at cargo control — 46 CFR 153.297

☐ Cargo handling space ventilation

- Forced exhaust ventilation — 46 CFR 153.310
- System standards — 46 CFR 153.312
  - Discharge 10 meters from accommodation / service spaces
  - Operable from outside space
  - Air exchange rate 30 times per hour
  - Exhaust above and below deck places
- Special ventilation rate — 46 CFR 153.316
  - Rate for certain cargoes (45 times per hour and no less than 4 meters above deck)

☐ Pumprooms — MSM Vol. I Ch.10 Appendix A, MSM Vol. II Ch. 5.I

NOTE: *If pumproom is not gas-free, issue requirement to make it available at next U.S. port.*

- Marine Chemist Certificate — 46 CFR 153.330
  - Chemist No. _____
  - Certificate No. _____
  - Date issued _____
- Ventilation — SOLAS 74/78 II-2/59.3
- Hoisting arrangement — 46 CFR 153.332
- Pump discharge pressure gauge — 46 CFR 153.333
- Bilge pumping system — 46 CFR 153.334
  - Witness operation and alarm
- Fire extinguishing system — SOLAS 74/78 II-2/63
- Electrical installation
- Special requirements — 46 CFR 153.336

Notes: _____

☐ Low pressure alarm

- Audible and visual alarms where cargo transfer is controlled
- Activates no less than 0.144 for an inerted tankship or no less than the lowest P/V valve vacuum setting

Operations:

NOTE: *Requirements for operations are detailed in 46 CFR 39.30-1.*

☐ Pressure drops

Determined through VCS from most remote cargo tank to the connection

Determined for all cargoes at maximum transfer rates and at lessor transfer rates

Determined through vapor hoses, if carried

☐ Cargo tanks properly filled

- Less than 98.5% of tank capacity
  OR
- Less than overfill setting

☐ High-level and overfill alarms been tested within 24 hours prior to loading cargo

☐ Operationally test and demonstrate remote operated valves

☐ Operationally test and demonstrate emergency shutdowns

Notes: _____

☐ Gauging system — 46 CFR 153.400

- Type

Open

Closed — 46 CFR 153.404
- – Vapor return connection
- – High level alarm
- – Means for sampling

Restricted — 46 CFR 153.406
- – Vapor-tight cover
- – Lock open P/V valves or valved bypasses
- – Sounding tube requirements — 46 CFR 153.407

☐ Tank overflow control — 46 CFR 153.408

- High level alarm — 46 CFR 153.409
  - – Set point (< 97%) _____%
  - – Witnessed operation test
  - – Visual / audible alarms at cargo control and open deck
  - – Marked “High Level Alarm”

Cargo overflow alarm — 46 CFR 153.408
- Independent of high level alarm
- Operates on loss of power
- Set point (< 100%)
- Witnessed test at tank
- Visual / audible alarms in containment area and cargo loading control
- Marked “Tank Overflow Alarm”

Automatic shutdown system — 46 CFR 153.408
- Independent of high level alarm
- Operates on loss of power
- Set point (< 100%) _____%
- Witnessed test at tank

Notes: _____

Cargo Gauging System:

☐ Closed gauging system — 46 CFR 39.20-3

- Independent of overfill alarm system
- Full range of measurement in each cargo tank
- Liquid level indicated where cargo transfer is controlled — 46 CFR 151.15-10
- Unit installed on cargo tanks during entire transfer if closed gauging system is portable

Liquid Overfill Protection:

NOTE: *Requirements for liquid overfill protection are detailed in 46 CFR 39.20-7.*

☐ Overfill system

- Provides an alarm upon loss of power or electrical circuitry failure
  - Audible and visual alarm on deck and where cargo transfer is controlled
  - Capable of being tested at the tank or have a electronic self-testing feature
- Properly marked on deck
- Operationally tested and demonstrated

☐ High-level alarm

- Independent of overfill system
- Provides an alarm upon loss of power or electrical circuitry failure
  - Audible and visual alarm on deck and where cargo transfer is controlled
  - Capable of being tested at the tank or have a electronic self-testing feature
- Alarm sounds not higher than overfill alarm and at no lower than 95% of tank capacity
- Operationally tested and demonstrated

☐ Spill valves — 46 CFR 39.20-9(c)

☐ Rupture disks — 46 CFR 39.20-9(d)

Notes: _____

☐ Toxic vapor detectors — 46 CFR 153.526

- Vapor detector
  - 1 fixed
  - 1 portable
  - Witness calibration

☐ General safety

- Entry into spaces — 46 CFR 153.934
- Opening of tanks — 46 CFR 153.935
- Storage of cargo samples — 46 CFR 153.935(a)

☐ Vapor Control System (VCS) — 46 CFR 156.120(aa) 46 CFR 39.10-13(d)

Vessel in not using a VCS

Vessel is using a VCS

- LOC endorsed for VCS use
- Complies with 33 CFR 156.120(aa) and 156.170(g)

☐ Cargo transfer procedures

- Signals — 46 CFR 153.953
  - Red flag
  - Red light
- Warning signs — 46 CFR 153.955
  - Minimum of two
  - Legends
    - "Warning"
    - "Dangerous Cargo"
    - "No Visitors"
    - "No Smoking"
    - "No Open Lights"
  - Lettering — 46 CFR 153.957
- Person-in-charge
  - Valid document — 33 CFR 155.700
  - Designated by master — 33 CFR 155.710
  - Speaks English or has interpreter — 46 CFR 153.959
- Approval to begin transfer — 46 CFR 153.972
- Cargo hose
  - Marked in accordance with 46 CFR 153.940
  - Working pressure
  - Date of last pressure test _____< 1 year
  - Temperature range _____

Notes: _____

Section 5: Cargo Operations for Natural Gas (LNG) Carriers

Vapor Control Systems:

☐ Person-in-charge of transfer system completed training program — 46 CFR 39.10-11

☐ VCS certification — 46 CFR 39.10-13

- Marine Safety Center Letter No._____
  OR
- Approval from recognized class society addressing the following items:
  - Vessel name
  - Class of vessel or official number
  - Call sign
  - Flag
  - Reviewed by proper authority to meet U.S. standard — 46 CFR Part 39
  - Inert gas manual amended — 46 CFR 32.53-85(b)
  - Proper allowable transfer rate (cubic meters / hour)
  - Applicable cargo tanks
  - Maximum density of cargo vapor
  - List of cargoes (proper cargo names)
  - Oil transfer procedures amended — 33 CFR 155.750(d)

VCS Design and Equipment:

NOTE: *Requirements for VCS design and equipment are detailed in 46 CFR 39.20-1.*

☐ Piping permanently installed

- Interim for chemical tankers

☐ Connection located at manifold

- N/A if chemical tankship venting system is not common

☐ Incompatible cargo vapors can be isolated

☐ Connections located at cargo tanks

Notes: _____

☐ Maximum allowable relief valve setting for cargo tanks ≤ 10 psig (69 kPa)

- Liquid and vapor connections — 46 CFR 154.530
- Shutoff valves located as close to tank as possible
  - Capable of local manual operation
  - At least one remotely controlled quick-closing shutoff valve
- Quick-closing valve emergency shutdown — 46 CFR 154.540
  - Closes all valves
  - Two remote locations
  - Fusible elements
  - Automatic shutdown of cargo pumps and compressors — 46 CFR 154.534
- Quick-closing valve requirements — 46 CFR 154.544
  - Fail close
  - Local manual closing
  - Witness test (< 30 seconds)
  - Time to close _____

☐ Maximum allowable relief valve setting for cargo tanks > 10 psig (69 kPa)

Shutoff valves located as close to tank as possible — 46 CFR 154.532

- Capable of local manual operation
- At least one remotely controlled quick-closing shutoff valve
- Witness test (< 30 seconds)
- Time to close _____

If piping is less than 2 inches (50 mm) — 46 CFR 154.532(b)

- Excess flow valve
- Closes automatically — 46 CFR 154.546
  OR

One valve that is capable of local manual operations and meets 46 CFR 154.540 and 154.544

☐ Cargo hose — 46 CFR 154.556

- Marking
- Hydrostatic test date _____ — 46 CFR 154.562

Notes: _____

☐ Gas detection systems

- Gas detection for "I" OR "I" and "T" cargoes — 46 CFR 154.1345
  - Fixed flammable gas detection system — 46 CFR 154.1350
    - Sampling points where required
    - Measures gas concentrations at least 0% to 200% of alarm concentrations
    - Date last calibrated _____
    - Span gas used _____
    - Concentration _____
    - Audible and visual alarms that are actuated— 46 CFR 154.1365
      - At 30% or less LEL
      - For power failure
      - For loss of gas sampling flow
    - Sampling points monitored every 30 minutes or less
    - Operable flow meter
    - Witness operation and operational tests
  - 2 portable detectors that each measure 0% to 100% LEL
- Gas detection for "T" OR "I" and "T" cargoes
  - 2 portable detectors that each show TLV
  - Fixed sampling tubes in each hold and interbarrier space — 46 CFR 154.1360
- Oxygen analyzer

Notes: _____

_____

_____

_____

_____

_____

☐ Atmospheric control (hold and interbarrier spaces) — 46 CFR 154.902

Vessel carries flammable cargoes with full secondary barriers

- Inert gas system
  - At least one check valve in cargo area to prevent backflow
  - Inert gas has < 5% oxygen
  - Audible and visual alarm set at 5%
  - Inerted spaces fitted with proper relief devices
- Stored gas
  - Must meet 46 CFR 154.1848

Vessel carries flammable cargoes with partial secondary barriers

- Meets requirements of full secondary barriers with the capacity to inert largest hold and interbarrier space, AND either
  - Meets 46 CFR 154.1848 OR
  - Has air drying system — 46 CFR 154.902(c)(2)

Vessel carries nonflammable cargoes with secondary barriers

- Meets requirements of full secondary barriers OR
- Has air drying system — 46 CFR 154.902(c)(2)

☐ Electrical (gas-dangerous space or zone) — 46 CFR 154.1010

- Intrinsically safe
- Only specific explosion-proof equipment in cargo handling rooms, cargo hose storage rooms, spaces with cargo piping, and gas-dangerous zones on the weather deck
- Only through runs of cable in cargo hose storage rooms, spaces with cargo piping, and gas-dangerous zones on the weather deck

Notes: _____

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